



UNIVERSITY OF NAIROBI
COLLEGE OF ARCHITECTURE AND ENGINEERING
SCHOOL OF ARTS AND DESIGN

BDS 413: PROJECT PAPER
(INTERIOR DESIGN)

**BLENDING BIOMIMICRY AND KAMBA CULTURE IN CITAM KAREN
YOUTH WORSHIP CENTER.**

BY:

DIANA NASIMIYU SITUMA
BO5/41284/2016

SUPERVISER:

MR. COLLINS. MAKUNDA

APRIL, 2020

DECLARATION

This project paper is my original work and has not been presented to any other examination body.

Diana Nasimiyu Situma

Date: 4/14/2020

Sign: 

B05/41284/2016

Declaration by Supervisor

This project paper has been submitted for examination with my approval as School of the Arts and Design, University of Nairobi Supervisor

Mr. Collins. Makunda

Sign:.....

Date:.....

Lecturer, School of the Arts and Design

For And On Behalf of School of the Arts and Design, University of Nairobi.**Dr. Lilac. Osanjo**

Sign:.....

Date:.....

Director, School of the Arts and Design

DEDICATION

To my family and friends, whom after witnessing me burn the midnight oil, are waiting for me to do design work for free.

ACKNOWLEDGEMENTS

The Almighty God, for giving me this divine idea on what research to do and constantly being my strength through it all. Without your grace none of this would be possible.

Mr. Collins .S. Makunda my supervisor from School of the Arts and Design, University of Nairobi for his guidance in the writing of this research and whose opinions I thoroughly considered to ensure what is covered is relevant to my research objectives.

The authors and publishers whose materials I have cited and a special thank you to those who were sampled and who graciously provided information by filling in the survey form.

David .W. Situma, who's creativity I inherited, a special thank you to my father for being supportive, understanding, caring and always believing in me.

My best Friend Lewis Maingi Muriungi, for supporting me all the way, positive criticism and praying for me. I'm eternally grateful.

Thoughtful criticism and suggestions from my fellow students who helped to improve this study. I hope the reader will help make it what it will be in the future.

GOD BLESS YOU ALL

ABSTRACT

Interior design is the art and science of enhancing the interior of a building to achieve a healthier and more aesthetically pleasing environment for the people using the space. Design is far much more than that. Designers are taught to solve interior space problems while focusing on the user's needs through experience and sustainability. This study focuses on creating a blend between biomimicry and kamba culture in a youth worship center through user experience.

A qualitative research was done for this study. Data collection techniques included direct observation, one on one interviews and surveys. Data analysis was done using descriptive methods including narrative and content analysis. Tables, pie charts and photographs were presented as well and the research findings show that there is room for improvement in terms of bringing a co-relation between spaces and the user and combining sustainability.

This research is divided into five chapters. Chapter one covers the background to the study, research objectives and questions, the significance of study and the scope. Chapter two is reviews of existing literature in line with the objectives of the study. The research methodology applied in the study is found in chapter three. Data analysis and presentation is given in chapter four. Finally chapter five summarizes the findings, the conclusions and gives recommendations from the study.

TABLE OF CONTENTS

Contents

DECLARATION	i
DEDICATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	iv
TABLE OF CONTENTS	v
LIST OF FIGURES	viii
LIST OF TABLES	x
LIST OF ACRONYMS/ABBREVIATIONS	xi
OPERATIONAL DEFINITION OF TERMS	xii
CHAPTER ONE:	1
1.0 INTRODUCTION OF THE STUDY	1
1.1 INTRODUCTION	1
1.2 BACKGROUND STUDY	1
1.3 PROBLEM STATEMENT	2
1.4 OBJECTIVES OF THE STUDY	2
1.4.1 SUB OBJECTIVES	2
1.5 RESEARCH QUESTIONS	3
1.5.1 SPECIFIC RESEARCH QUESTIONS	3
1.6 SIGNIFICANCE OF THE STUDY	3
1.7 LIMITATIONS OF THE STUDY	4
1.8 THE SCOPE OF THE STUDY	4
1.9 CONCLUSION	4
CHAPTER TWO:	5
2.0 LITERATURE REVIEW	5
2.1 INTRODUCTION	5
2.2 REVIEW OF THEORETICAL LITERATURE	5
2.2.1 DESIGN AS A CULTURAL ARTIFACT	5
2.2.2 THE BIOMIMICRY APPROACH	7
2.3 PROFILE OF WORLD REKNOWN DESIGNER	7

2.3.1 DESIGN AS A CULTURAL ARTIFACT	7
2.3.2 THE BIOMIMICRY APPROACH	12
2.4 DESIGN EXEMPLAR	16
2.5 DESIGN PROCESS.....	18
2.6 ANALYTICAL REVIEW	19
2.7 CONCLUSION.....	20
CHAPTER THREE:	21
3.0 RESEARCH DESIGN AND METHODOLOGY	21
3.1 INTRODUCTION	21
3.2 RESEARCH METHODOLOGY.....	21
3.3 POPULATION- TARGET AND SAMPLE	22
3.4 SAMPLING METHOD	22
3.5 DATA COLLECTION PROCEDURES	23
3.6 DATA ANALYSIS.....	25
3.7 DATA PRESENTATION METHODS	26
3.8 LOGICAL FRAMEWORK.....	26
3.8 CONCLUSION.....	28
CHAPTER FOUR	29
4.0 SITE ANALYSIS AND INTERPRETATION OF FINDINGS	29
4.1 INTRODUCTION	29
4.2 QUALITATIVE ANALYSIS.....	29
4.3 QUANTITATIVE ANALYSIS	30
4.4 PRESENTATION OF FINDINGS	34
CHAPTER FIVE	39
5.0 SUMMARY FINDINGS CONCLUSIONS AND RECOMMENDATIONS.....	39
5.1 Introduction.....	39
5.2 Summary of Data Analysis/Findings	39
5.3 Recommendations.....	39
5.4 Conclusion	45
5.5 Suggestion for further study.....	45
REFERENCES	47

APPENDICES

APPENDIX I: Survey questions

APPENDIX II: Estimated budget

LIST OF FIGURES

Figure 2.1 Hotel room in Dubai	9
Figure 2.2 Hotel Entrance interior	10
Figure 2.3 Hotel Arts in Barcelona	11
Figure 2.4 Modern Mansion in the heart of Paris.....	11
Figure 2.5 The Turning Torso	13
Figure 2.6 Bird skull shoe	13
Figure 2.7 Eastgate Center	14
Figure 2.8 Graber Cellular	15
Figure 2.9 Bamboo flooring	15
Figure 2.10 Tutu 2.0 Lamp by Thambisa Mjo.....	16
Figure 2.11 Nomgcana Lamp	16
Figure 2.12 The Hlabisa Bench.....	17
Figure 4.13 Gender of respondents.....	30
Figure 4.14 Number of Respondents.....	31
Figure 4.15 How long the respondents have been members.....	31
Figure 4.16 Problems facing the tent.....	32
Figure 4.17 How the respondents find the idea.....	33
Figure 4.18 Respondents preferred churches in terms of design.....	34
Figure 4.19 Landscaping in CITAM Karen.....	37
Figure 4.20 Interior Architecture in CITAM Karen	37
Figure 4.21 Stage design in CITAM Karen	37
Figure 4.22 Furniture in CITAM Karen	37
Figure 4.23 Current demolished CITAM Karen	38
Figure 4.24 Current demolished CITAM Karen	38
Figure 5.25 Honey Comb	40
Figure 5.26 Topeka Bible Church stage design	40
Figure 5.27 Stage design sketch	41
Figure 5.28 Floor plan of proposed layout of interior.....	42
Figure 5.29 Landscape garden design	43

Figure 5.30 Landscape design	43
Figure 5.31 Landscape bench design	43
Figure 5.32 Pergola design	43
Figure 5.33 Sketch of pew design	44
Figure 5.34 Sketch of lighting design	44
Figure 5.35 Sketch of lighting design	45

LIST OF TABLES

Logical framework.....	27
------------------------	----

LIST OF ACRONYMS/ABBREVIATIONS

CITAM- Christ Is The Answer Ministries

OPERATIONAL DEFINITION OF TERMS

Biomimicry- is the art of designing and producing materials, structures and systems that are modelled on biological entities and processes. It is based under the principle of reduction in sustainability through embracing natural features to reduce waste.

Kamba- a member of a people of central Kenya, ethnically related to the Kikuyu.

Interior Design- is the art and science of enhancing the interior of a building to achieve a healthier and more aesthetically pleasing environment for the people using the space.

Holistic- characterized by the belief that the parts of something are intimately interconnected and explicable only by reference to the whole

Sustainability- something that improves the quality of human life while living within the carrying capacity of supporting eco-systems

Eco-efficiency- promoting a transformation from unsustainable development to one of sustainable development. It is based on the concept of creating more goods and services while using fewer resources and creating less waste and pollution.

Green Design- Product design philosophy that treats environmental attributes as design objectives and not as constraints.

CHAPTER ONE:

1.0 INTRODUCTION OF THE STUDY

1.1 INTRODUCTION

In an article by Ryan Nelson interviewing Eleazar Ruiz on the holistic approach to church design, he says that Interior design is always communicating something and one of the reasons cathedrals are so tall with such high ceilings is to make you feel small when you're coming to these places to worship a huge God. (Nelson, 2016)

In most of the churches in Nairobi, Kenya, there is little to zero approach on creating experienced design in terms of biomimicry and blending of culture to make it more unique and appealing design that can affect the congregation. They are all mostly westernized and the materials used are not sustainable. The following section will be showing the problem the researcher's case study has the specific objectives than can solve the problem as well as the importance, scope and limitations of the study.

1.2 BACKGROUND STUDY

The researcher choose CITAM Karen Youth worship center as the case study because in terms of landscaping the area currently has a plain approach to it and there are no pathways around the church as well as use of green landscaping that uses energy efficiently. In terms of interior architecture CITAM Karen there is a problem in terms of the areas of lighting, arrangement of furniture and the stage design has lack an aesthetic value to it. There is also lack of a sense of belonging or creativity because at the moment it's just a worn out tent that lacks ventilation systems and in terms of exhibition and display there is not much thought put into it.

The researcher thinks it's important to use experienced design in a church because nature is clear indication that God exist and it brings a sense of tranquility and peace and awe. This user experience philosophy is a type for design methodology that is focused on the overall emotional impressions of customers. It is often measured with satisfaction metrics that simply ask people how happy they are with an experience. The researcher strongly

feels that inclusivity of nature based designs together with surrounding culture will bring about a sense of peace and belonging.

1.3 PROBLEM STATEMENT

Churches like International Christian Center in Nairobi West and River of God in parklands are built without any sense of belonging to the culture or environment. They are mostly westernized. In CITAM Karen Youth center, there is lack of nature inspired designs and use of eco- friendly materials in youth worship centers. It currently lacks the aesthetic sustainability approach to it in terms of relatable and durable design. It is important to put into consideration nature based design and blending it with the Kamba culture to enhance the youth center to a more sustainable design in terms of materials and relatable in terms of aesthetics.

1.4 OBJECTIVES OF THE STUDY

To blend sustainable biomimicry and cultured designs in CITAM Karen Youth center.

1.4.1 SUB OBJECTIVES

- I. To establish the importance of blending sustainable biomimiced designs and culture in a youth worship center.
- II. To identify how biomimicry and culture can be combined in interior spaces and landscape.
- III. To discover the extent in which CITAM Karen Youth center has blended biomimicry and culture.
- IV. To propose design solutions that blend biomimicry and Kamba culture in CITAM youth center.

1.5 RESEARCH QUESTIONS

How can one blend culture and sustainable biomimicry designs in CITAM Karen Youth worship center?

1.5.1 SPECIFIC RESEARCH QUESTIONS

- I. What is the importance of blending sustainable biomimicked designs and culture in the youth worship center?
- II. In what ways can one combine biomimicry with culture in the interior spaces and landscape?
- III. To what extent has CITAM Karen youth center blended biomimicry and culture?
- IV. What design solutions can one blend biomimicry and Kamba culture in CITAM Youth worship center?

1.6 SIGNIFICANCE OF THE STUDY

The importance of the study is to bring an enhancement aesthetically pleasing and sustainability in interior of the center in terms of space planning, materials used, furniture and landscaping by blending culture and nature. Culture in the sense that it is relatable with congregation in terms of beads and patterns and nature in the sense of materials, form of shape and materials. The culture is inspired by the a Kamba culture by incorporating colors, patterns and beads into the designs as well as blending it with biomimicry, which will promote green design both on the interior, furniture and landscape.

The researcher sought out to establish eco-friendly and cultural ways to turn this space into one that the customers will feel more at home, will relate with and to change the ambience which mostly connects with the user. The concepts of interior design aimed are to enhance eco-performance in the interior spaces through use of sustainable materials like bamboo on

the stage props and flooring as well as furniture. In terms of landscaping it's to create an eco-friendly landscaping, which is also known as green or sustainable landscaping, is a way of creating and maintaining land in order to save as much energy as possible, while also being kind to the environment.

1.7 LIMITATIONS OF THE STUDY

Having limited time to collect data efficiently and find out how the youth would particularly want to experience the youth center. Having the youth being from the ages of 13 to 25 it was difficult interviewing or sending out surveys that don't have consent for ages 13 to 18 therefore not able to find out what a particular group would want. Another limitation was money because the transportation to and fro and usage of internet and calling data to collect data.

1.8 THE SCOPE OF THE STUDY

The researcher majored in the interior design profession and the goal was to blend culture specifically the Kamba culture with biomimicry in a youth worship center in CITAM Karen. It mainly has a large number of youth which most of the data collection was done on. The study took four months to complete the study referred mainly to concepts of interior design, landscaping, furniture and exhibition and display which aim at enhancing eco-performance on the landscapes, furniture and interior materials as well as arrangement of furniture. The researcher approached the problem by blending culture with biomimicry to try and incorporate a sense of belonging and a relation to nature in the center.

1.9 CONCLUSION.

In summary, the main problems in CITAM Karen are basically lack eco-efficient materials and systems and also lack of cultured inspired designs. The researcher's objective is to identify the importance of blending biomimicry and Kamba culture in a youth worship center and come up with proposed designs that will improve the situation.

CHAPTER TWO:

2.0 LITERATURE REVIEW

2.1 INTRODUCTION

All man-made changes affecting our lives are by design. Design is a realizing vision of the future and what it might become in the future especially in an increasingly complex and less certain society. Change has always been with us. Changing environment context results in human physiological changes which are necessary for life, and change is life. Without change there would be no growth, no self-development (Wagih, 2018).

According to the following literature, the researcher discusses the importance of use of biomimicry in interior design there are sustainable and incorporating culture in interiors to bring a sense of belonging.

In the following chapter, the researcher discusses how design can be used as a cultural artifact and also the biomimicry approach to coming up with designs together with exemplar who inspired this study.

2.2 REVIEW OF THEORETICAL LITERATURE

2.2.1 DESIGN AS A CULTURAL ARTIFACT

Commisceo Global (2014) did a review of an article by Prime Resi known as How Cultural Differences Impact Interior Design and it shows that culture impacts everything we do as designers. In business, one should always consider cultural differences, especially in interior design. In this article, Joe Burns explains that to meet the client's expectations as a designer one needs to know the customer's culture.

According to the managing director and co-founder of Oliver Burns, Joe Burns, central London's property market is mostly owned by international buyers (Commisceo Global, 2014). These buyers could possibly be looking to buy a home or an apartment where their children can stay when they go to London for studies, but the fact is that all nationalities have their own culture that influences their lifestyle.

Commisceo Global (2014) states that Burns believes that designers and real estate developers must consider their clients to create a suitable home for them. Though rich clients have the same taste that mainly includes items of high quality, there are also individual preferences that need to be noted down.

Oliver Burns' clients usually have specific and complex ideas according to Burns as stated by Commisceo Global (2014). However, ideas may be different, but most clients do not have enough time due to their busy schedule and this is why the company tries to find out from the clients' needs immediately to make the most of their limited time. The company has hired a multinational team that can meet every single expectation of their customer.

Burns says according to Commisceo Global (2014), that clients are greatly influenced by their families, mostly British and Indians. Their customers are looking for a home away so they have a specific property style and need. Homes in the Mayfair, St James's and Knightsbridge areas mostly have period detailing which attracts a lot of Indian, Russian and British people.

Commisceo Global (2014) notes that for Middle Eastern clients are attracted to an older luxurious style and that's the reason they often request textures such as marble and velvet. They also ask carpets and rugs which is more comfortable to walk bare foot in. Other features they often want is a prayer room, a separate sink to wash their feet in before prayer.

According to the reviewed article by Commisceo Global (2014) on Prime Resi on Burns, when designing homes, it is very important to understand the culture of a client and if the culture is completely taken into consideration then designers can exceed the customer's expectation thus making the take away for all businesses interior design based is that they should pay a lot of attention to culture (Commisceo Global, 2014).

According to an article by bold think (2016) it states that the design sector is always changing and it influences as well as influenced by the culture. The commercial art form is what design is currently but this has not always been the case, design was a typical blend of art and desires that have capitalism in mind (Bold think, 2016).

2.2.2 THE BIOMIMICRY APPROACH

According to Interior trends (2016) nature is a great source of inspiration for designers to find ideas. The outdoors brings a sense of rejuvenation of the body and mind that brings tranquility but it is rare that you'll find yourself outside during working hours. (Interior trends, 2016)

According to Interior trends (2016) nature has a positive influence to the society and there has been a change towards designers focusing on nature inspired ideas into interior spaces.

Design systems that are based on biological and natural components and processes, it can be as simple as getting nature inspired colors in interiors and in the construction of a building by incorporating nature and studying animal habitats to come up with new ways of efficiently heating and cooling a building (Interior trends, 2016).

When designing spaces that are nature inspired according to Interior trends (2016) simply imitating nature with use of color can be an effective way to help people feel that their new spaces are enjoyable and pleasing. Most of the time it is often executed by using a dark color on the flooring, mid-level colors on the walls, and a light color on the ceiling. This simple combination subconsciously creates a sense of harmony, unity and balance and helps the users simply and easily understand their space stated by Interior trends (2016). The target of any interior space is to help users have a sense of being comfortable and pleased in their spaces which according to research allows for greater atmosphere of productivity and an improved lifestyle but as biomimicry research continues to evolve day by day, be watchful on for how interior spaces continue to grow and understand of how certain spaces makes one feel (Interior trends, 2016).

2.3 PROFILE OF WORLD REKNOWN DESIGNER

2.3.1 DESIGN AS A CULTURAL ARTIFACT

When world comes together as one, culture becomes a problem that we have been coming up with design solutions for each other for many centuries. Initially, clients of design were

members of certain tribes or were living in around the same village. At different areas around the world, people designed for the same functional purposes and sometimes in unison without being aware. In communities far remote from each other different ways of written communication were designed and different countries claim the invention of a variation of the printing press or gunpowder. If we look at the design of clothing, we easily discover cultural differences related to taste as well as to context of use. The globe is rapidly shrinking. Most new designs will be quickly discovered by strangers that live in far-away locations. In fact, recent design efforts often aim at worldwide adoption. But reaching new potential users does not mean it fits them all, like it did fit those that lived in the designers own village (Veer, Gerrit. 2011)

Yves Behar, often regarded as one of the most influential industrial designers alive (and chief creative officer of Jawbone) likes to say that “*the work of a designer is really at the intersection of commerce and culture*”. (Proto.io, 2015)

DIANE THORSEN

According to the article by Molina (2018) she states that Diane is from South Africa and grew up in a surrounding that had extraordinary natural beauty. She admits this has given her a deeper appreciation for textures, patterns and colors that are simply nature’s miracles. She says that the design of spaces and buildings we create and occupy as an international creative language that touches every aspect of our lives in many ways (Molina, 2018). Design affects people emotionally because it sets the atmosphere. She’s always loved the process of design as this philosophy, which is the user experience philosophy: research, inspiration and combination of ideas, textures, shapes and forms evolve and take shape as a result of a continuous communication between the clients and their team at Perkins and Will’s.

Joanne Molina (2018) continues to note that the Issey Miyake’s philosophy which states that ‘Designs that reflect and address the way people live today’ – resonates with Diane Thorsen. Miyake has a passion to explore and be inventive. He is constantly reinventing himself and searching for other new ways to come up with combinations of aesthetics with innovative procedures. Everything he has designed is highly and very intellectual from the

beginning and then through collaboration, a product emerges that is inspiring, pleasing and fresh (Molina, 2018) Diane admires his approach for collaborating with mathematicians, musicians and other famous architects and designers. His products are created using different fabrics made of recycled fibres that are developed by some companies in Japan and are produced with the cooperation of factories in the textile-producing regions like China and Thailand.

Diane's philosophy has always been about collaborative idea-sharing, as she believes that



FIGURE 2.1 HOTEL ROOM IN DUBAI BY DIANE THORSEN (SOURCE: WWW.IDENTITY.AE, 2018)

approach creates the best results. As Diane puts it she say that great design is an international language that includes function, shape, form, color and texture – as

well as the universal language of emotional reactions based on the ambience of a place. She also points out that these is an unspoken but common pattern in every culture (Molina, 2018) She believes design should give information and provide people with a sense of place, and emotionally put people in the history and character of a certain location.

Molina (2018) states that there are several works she has done in Dubai that has earned her the position of the top interior designer in Middle East is that she uses the traditional approach to luxury, which defines as lavish design and rich finishes like velvet and marble. The focus right now is what she can contribute to the design society. Design now currently addresses responses that are ethical, creative, connected, tasteful and sustainable. Diane says that people are now seeking out rare and shareable experiences that focus on wellness, service and authentic experiences in beautifully but simply designed spaces for example the interior spaces she did in Dubai in Figure 2.1 and 2.2 (Molina, 2018).

According to Molina (2018) Diane says when searching for a solution to an issue that we



FIGURE 2.2 HOTEL ENTRANCE INTERIOR BY DIANE THORSEN IN DUBAI (SOURCE: WWW.IDENTITY.AE, 2018)

as humanity created in the past, most innovation is created. Pressure on managing our natural resources and waste is increasingly bringing out the most exciting innovations, such as

regenerative buildings, the adaptive reuse of existing buildings, 3D printing and the recycling of materials in creative and fun ways (Molina, 2018). Diane states that she would love to see all plastic materials removed and replaced with new and better materials which are much kinder and safer to our planet. Dubai which is recognized as one of the most forward-thinking, futuristic countries, it is positioned to lead the world into sustainable and zero net carbon building design.

Design thinking at any level should be a human-centered approach kind of thinking. This creative way of thinking breaks every barriers and limitation linked with gender, race or religion, and brings together what's desirable and pleasing from a human point of view with what's technologically feasible and economically viable (Molina, 2018). It allows people to use creativity that knows no restrictions to address socially created challenges.

Diane states that if all designs addressed resiliency and sustainability at the outset, and customers were informed about long-term benefits, we would not be in the current situation we are in, where countries are devastated by water shortages or natural disasters or pollution as stated by Molina (2018). There is so much we as humanity can learn from nature, as natural systems have evolved to achieve a certain kind of resilience. As architects and designers, we take this lens of opportunity and use natural systems and patterns to rethink and redesign our built environment. (Molina, 2018)

SARAH FLOCH

Sarah Folch has been creating an incredible interior design career for over 25 years in Barcelona, Spain. Sarah herself has been building a career into being considered one of the top interior designers of Spanish origins being involved in a variety of interior project types (Pinto, 2019).



FIGURE 2.3 HOTEL ARTS IN BARCELONA
(SOURCE: WWW.BESTINTERIORDESIGNERS.EU, 2019)

As stated by Pinto (2019) when asked about what she loves the most about her work, Sarah Folch answers that she enjoys creating for other people, enjoying a feeling of fulfillment every time she helps someone's dream to be brought to life and becoming a reality (Pinto, 2019). Among them is a luxurious restaurant for Hotel Arts in Barcelona in Figure 2.3, the expansion and refurbishing of an old 1,000 m2

chalet to a modern mansion in the heart of Paris in Figure 2.4

However, according to Pinto (2019) curiously enough this was not the biggest challenge that the Spanish designer has ever managed to conquer. When she decided to create a large family without giving up her study of interior design. With three young children and work, projects. She had to get creative to not give up the two important purposes of my life, create a family and a career, while enjoying both (Pinto, 2019).

Pinto (2019) states that Sarah Folch's style is best defined as being polished, elegant and timeless. Whenever she and her team take on a new challenge



FIGURE 2.4 MODERN MANSION IN THE HEART OF PARIS. (SOURCE: WWW.BESTINTERIORDESIGNERS.EU, 2019)

one of the cares she takes is adapting to the style of the projects. With the aforementioned features, she manages to easily please more than one taste. From her point of view, each decor style is timeless and dignified, yet she finds every style of interior decor wonderful (Pinto, 2019).

Right now Sarah Folch Interior Design as stated by Pinto (2019) is working on a series of interior design projects in different countries. One of the measures she usually takes in different jobs and cultures is she studies the culture, and adapts her work to its way of living. Communication, for her, is an essential element for the future of the industry. As a communicator, the Spanish interior designer manages to keep her networks up to date regularly (Pinto, 2019).

2.3.2 THE BIOMIMICRY APPROACH

Biomimicry is the art of designing and producing materials, structures and systems that are modelled on biological entities and processes. It is based under the principle of reduction in sustainability through embracing natural features to reduce waste. It comprises of designs inspired by nature; the study of nature, inspiring designs, to solve human problems.

THE POWER OF SHAPE

The Turning Torso opened in 2015 in Sweden. Turning Torso was inspired by a sculpture called Twisting Torso, which was made entirely from white marble by Santiago Calatrava, the engineer, architect, and sculptor who also designed the Turning Torso (Lembke, 2017).

According to Lembke (2017) the idea to create this incredible structure came at a time when Malmö was undergoing a renaissance, with local politicians eager to redevelop the former industrial stronghold of the city's west, with a vision towards making the decaying area a hallmark of urban renewal, featuring homes, businesses, culture, and entertainment. They wanted something that had power and would make an impact not just in the region but around the world. What started out as sketches of the human spine has turned into a 54-



FIGURE 2.5 THE TURNING TORSO, SWEDEN. (SOURCE: WWW.THECULTURETRIP.COM, 2008)

storey high building with a 90-degree twist. In the flora realm, we can find similar skeletal rationality in the structure of a tree or the veins of a leaf (Lembke, 2017).

Turning Torso, as stated by Lembke (2017) shown in figure 2.5, is also recognized for its pioneering sustainable design, as well as for its execution of sustainable industry standards. One hundred percent of the energy consumed in the building is renewable, coming from hydro, solar, wind, and geothermal sources. Residents can make informed decisions

regarding their energy consumption with electricity consumption meters installed in each unit, all of which also include an organic waste

disposal unit, which converts all waste material into energy. (Lembke, 2017)



FIGURE 2.6 BIRD SKULL INSPIRED SHOE BY MARIEKA RATSMA. (SOURCE : WWW.DEZEEN.COM, 2012)

According to Chalcraft (2012) the Biomimicry shoe in figure 2.6, is the result of a unique collaboration between Dutch fashion designer Marieka Ratsma and American architect Kostika Spaho. The idea for this shoe highlights the aesthetics and the shape of the bird skull, along with the characteristics of the lightweight and highly differentiated bone structure within the cranium. Such structure requires less support material, resulting in optimal efficiency, strength and elegance. Nature has been the main source of inspiration for the making and shaping of this shoe (Chalcraft, 2012).

By looking at nature in a different way, Chalcraft (2012) states that the designer can open our eyes to ingenious systems and ways of life. Nature can

inspire us towards inventive designs and productive, successful collaborations. Also for fashion, nature can be a great inspiration, especially for the use of materials and smarter constructions. Fast developing techniques such as 3D printing can help us by giving the possibility to approach nature's shapes even more closely. Nature functions as no other in the use of sources, collaborations and bundling forces. The insight that nature gives us can be used for a new way of approaching design (Chalcraft, 2012).

C02 AS A FEEDBACK

According to Fehrenbacher (2012) the Eastgate Centre in Harare, Zimbabwe shown in figure 2.7, typifies the best of green architecture and ecologically sensitive adaptation. The country's largest office and shopping complex is an architectural marvel in its use of biomimicry principles. The mid-rise building, designed by architect Mick Pearce in collaboration with Arup engineers, has no conventional air-conditioning or heating, yet



FIGURE 2.7 EASTGATE CENTRE, HARARE, ZIMBABWE (SOURCE: WWW.INHABITAT.COM, 2012)

stays regulated year round with dramatically less energy consumption using design methods inspired by indigenous Zimbabwean masonry and the self-cooling mounds of African termites! (Fehrenbacher, 2012). The Eastgate Centre uses less than 10% of the energy of a conventional building its size. These efficiencies translate directly to the bottom line: Eastgate's owners have saved \$3.5 million alone because of an air-conditioning system

that did not have to be implemented (Fehrenbacher, 2012).

Blinds and shades, as shown in figure 2.8, Gayle (2016) according to particularly cellular shades, designed to insulate can have a noticeable effect on the amount of energy needed to heat and cool a home. These products trap a room's heat in the winter and block solar heat in the summer. Your wallet and the planet will be grateful. Graber's Crystal Pleat

cellular shades provide the highest level of insulation of any type of window treatment. Graber cellular shades reduce heat transfer by 22% in winter and 56% in summer. (Gayle, 2016)



FIGURE 2.8 GRABER CELLULAR GREEN SHADES (SOURCE: WWW.LIVINGROOMSBYGAYLE.COM, 2016)

Even carpet brands out there are choosing to offer products made from recycled nylon, low emission adhesives, and other organic or renewable materials. Not only do these materials aid in safe indoor air quality for you, their manufacturing is environmentally conscious and reduces CO₂ emissions to the atmosphere (Gayle, 2016).

HARDWOOD/BAMBOO FLOORING

According to Carpet Central and Hardwood flooring inc (2018) unfortunately, illegal foresting and harvesting protected species is still an issue that exists when it comes to wood collection. As the consumer, it is important to purchase products from companies that abide



FIGURE 2.9 BAMBOO FLOORING BY CARPET CENTRAL HARDWOOD (SOURCE: WWW.CARPETCENTRALHARDWOOD.COM, 2018)

by strict supply regulations and sustainable forestry. Making this conscious effort allows us to enjoy the rich beauty of hardwood flooring while preserving and replenishing our forests. (Carpet Central and Hardwood flooring inc, 2018)

Carpet central and Hardwood company makes flooring and carpets inspired by green design. Some hardwood flooring meets green flooring standards, and consumers should look closely at brands and certification labels to determine if a wood floor is made from sustainable materials and manufactured in an environmentally friendly way as stated by Carpet Central and

Hardwood flooring inc (2018). Green hardwood floors have all the benefits of less environmentally friendly wood floor products – beauty, style and a popular choice among decorators.

Bamboo flooring seen in figure 2.9, is one of the most popular green flooring options. It gets its eco-friendly stamp of approval because it is made from a rapidly renewing resource that matures quickly and regenerates without replanting. Topped with a polyurethane coating, the green attributes of bamboo flooring are enhanced by its durability and design flexibility (Carpet Central and Hardwood flooring inc, 2018).

2.4 DESIGN EXEMPLAR



FIGURE 2.10 TUTU 2.0 LAMP BY THABISA MJO (SOURCE: WWW.DESIGNINDABA.COM, 2018)

THABISA MJO

According Martin (2018) Thabisa Mjo as shown in figure 2.10, started her company because she wanted to create beautiful spaces that would inspire anyone walking into them to have an emotional connection with that space and she considers design a form of story-telling and design is the medium through which those stories are told. The Tutu 2.0 light for example. Inspired by the colorful knee length Xibelani skirt, worn by Tsonga women to celebrate their culture, the light is eye-catching not only for the range of colors it comes in but also its sheer scale. The handcrafted and woven light weighs about 10kg (Martin, 2018).

Mash.T Design Studio is an interior design firm, specializing in design for the retail and hospitality sectors, and has recently branched out into furniture design. She wanted to create beautiful spaces that would inspire anyone walking into them to have an emotional connection with that space (lionessofafrica, 2016).

As stated by Martin (2018) although she has a background in production design and architectural drawing, Mjo says her childhood growing up in the Eastern Cape also forms part of her inspiration. She says that although she is influenced by her different cultural background, she also likes to give products a bit of a modern twist

and the Tutu 2.0 forms part of the Pieces of Me collection, inspired by people and things that she loves and admires (Martin, 2018).

The Nomgcana Lamp as seen in figure 2.11, takes its name from the direct translation of the word which is lines and she wanted this entire collection to be modern, clean lines and just be really cool, but to also feel like home (Martin, 2018). Using this iconic South African bag really is a nod to all those men and women she often saw hogging those bags.

But ultimately for Mjo, stated by Martin (2018) design is about telling stories. She considered design a form of storytelling and design is the medium through which those stories are told. For her design is a way to tell stories and celebrate other women through her work, especially ones doing their best to stay true to themselves while also exercising their sense of agency. Using her experiences and environment to come up with stories for her designs that will ultimately connect with her clients (Martin, 2018).



FIGURE 2.11 NOMGCANA LAMP
BY THABIS MJO (SOURCE:
WWW.DESIGNINDABA.COM, 2018)



FIGURE 2.12 THE HLABISA BENCH BY PHILLIP HOLLANDER AND STEPHEN WILSON OF IN COLLABORATION WITH MASH T DESIGN STUDIO (SOURCE: WWW.DAILYMAVERICK.CO.ZA, 2019)

In figure 2.12, the distinctive shape and the texture of the bench catch the eye: resembling a Siamese chair, the bench is inspired by her grandmother's three-legged pot and is a representation, as often in her work, of home as stated by Tonisi (2019). The silhouette, a quiet wave that makes you feel, once seated, as if you are in a cocoon, is a reference to the round hills of KwaZulu-Natal. And to weave the back of the bench, the team garnered the talent of master weaver Beauty Ngxongo

(Tonisi, 2019).

According to Tonisi (2019) Mjo's design work, alongside independent Johannesburg-based visual artist and clothing designer Sakhile Cebekhulu's is being sold at a gallery in Paris, France, called Bonne Espérance, her first step into retailing a consumer range.

2.5 DESIGN PROCESS

LANDSCAPING

In terms of landscaping the researcher intends on Use Naturalistic Designs: Formal gardens, with clear structure, geometric shapes, and symmetry, require a heavy human hand. Controlling nature requires a lot of maintenance! Naturalistic designs draw inspiration from nature, and in nature, plants grow and move. Designing gardens that mimic nature will result in a garden that can grow and change with less maintenance.

INTERIOR ARCHITECTURE

In the interior aspect the researcher intends on creating an atmosphere that brings out a blend between biomimicry and culture in terms of the color of the walls, lighting, stage design and the material fixtures used on the ceiling, flooring, walls and windows. The sustainable approach is to use biomimiced systems that are eco efficient and that are durable. The areas the researcher will be working on is the stage, the area where the congregation sits and the sound room.

EXHIBITION AND DISPLAY

In terms of exhibition and display the arrangement of the furniture and the design of the sound room, church office isn't quite there therefore the researcher plans on including more partitions like the choir room, washrooms and the conference room to hold meetings. The researcher also plans to include display that is biomimiced in terms of shape and nature inspired designs. The areas the researcher plans to work on is a room where musical instruments can be stored and displayed, a pathway that has wall fountain and a flower display unit.

FURNITURE

In terms of furniture the researcher intends using eco-friendly materials like bamboo for the chairs, carpets that produce less CO2 feedback and use eco-efficient blinds on the windows. The systems and the shapes are all biomimiced and blended with beads, patterns and colours from the Kamba culture. The five furniture that the researcher will be working on are the pathway lighting, benches, arm chair, table and the pulpit.

2.6 ANALYTICAL REVIEW

The researcher plans to use the idea of her exemplar Thabisa Mjo by creating beautiful spaces that would inspire anyone walking into them to have an emotional connection with that space as well as telling a story from the designs. The knowledge that will be added is

the blending of a culture that is closer to home which is the Kamba culture and biomimicry in terms of nature inspired design in terms of shape and systems to bring out a more eco efficient design on the interiors and landscapes.

2.7 CONCLUSION

In summary, the researcher's methods of philosophy have been greatly inspired by Diane Thorsen who is a world known Interior designer whom is inspired by surrounding culture for her interiors and Thabisa Mjo who is an African Interior designer greatly known for her Xibelani skirts that were inspired by the Tsonga women. The research also looked into biomimicry in terms of shape, systems and materials and planned to incorporate a blend between the Kamba culture and biomimicry in CITAM Karen Youth worship center.

CHAPTER THREE:

3.0 RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

In this Chapter, the research methodology is discussed. A qualitative research approach was used, specifically case study method. The aim was to establish whether there are opportunities for blending biomimicry and Kamba culture in CITAM Karen youth worship center. Methodology included collection of primary and secondary data. Secondary data was collected through the review of literature from publications such as books, reports, articles, journals and web sources. Primary data was collected from a selected group of members of the church. Much of the information was collected through surveys, non participant observation, and review of existing records. Analysis of the data collected involved field notes, narratives, records and visual observations as photographs.

3.2 RESEARCH METHODOLOGY

According to Defranzo (2011) qualitative Research is primarily exploratory research and it is used to gain an understanding of specific reasons, different opinions, and motivations. It provides a deeper knowledge into the problem or helps to develop ideas or a hypotheses for a potential quantitative research and it is also used to uncover certain trends in ideas and opinions, and go deeper into the specific problem (Defranzo, 2011).

Qualitative data collection methods vary using unstructured or semi-structured techniques. Some common methods include focus groups (group discussions), individual interviews, and participation/observations as stated by Defranzo (2011). The sample size is typically small, and respondents are selected to fulfil a given quota.

Qualitative methods allows the researcher to study certain issues in depth and detail without being restricted by pre-determined categories of analysis like reviewed literature. It requires the use of standardized measures in order to fit the different perspectives and experiences of people into a limited number of predetermined response categories to which numbers are assigned. This kind of research offers research values openness and flexibility.

3.3 POPULATION- TARGET AND SAMPLE

According to My Accounting Course (2020) population is also known as target audience, this term refers to a group of people that possess certain attributes that can be classified properly to separate them from the entire population and the purpose of this technique is to understand and evaluate their preferences and behaviors in order to market a given product or service or to study a given element that appears among them like behavior patterns.

The researcher's target audience is an average of 10 people from the youth that attend the church from ages 18-35, one youth pastor and the 3 members of the worship and sound crew.

3.4 SAMPLING METHOD

Simple Random Sampling: This is the best probability sampling techniques that helps in saving time and resources, is the Simple Random Sampling method and it is a trustworthy method of obtaining information where every single member of a population is chosen randomly, merely by chance and each individual has the exact same probability of being chosen to be a part of a sample (Bhat 2020). The researcher used this specifically for the online surveys.

Convenience sampling: According to Shantikumar (2018) convenience sampling is perhaps the easiest method of sampling, because participants are selected based on availability and willingness to take part. Useful results can be obtained, but the results are prone to significant bias, because those who volunteer to take part may be different from those who choose not to (volunteer bias), and the sample may not be representative of other characteristics, such as age or sex (Shantikumar, 2018). Note: volunteer bias is a risk of all non-probability sampling methods. The researcher used this method for the interviews.

3.5 DATA COLLECTION PROCEDURES

CLOSED-ENDED SURVEYS AND QUESTIONNAIRES

According to Jovancic (2019) closed-ended surveys are based on questions which give respondents predefined answer options to opt for. Categorical and interval/ratio questions are two major types of closed-ended surveys.

Categorical survey questions can be further classified into yes or no choices, multiple-choice questions, or checkbox questions and can be answered with a simple “yes” or “no” or a specific piece of predefined information as stated by Jovancic (2019). Interval/ratio questions, on the other hand, can consist of rating-scale, or matrix questions and involve a set of predefined values to choose from on a fixed scale. Surveys are an effective means of data collection (Jovancic, 2019).

The researcher chose to use surveys because of the flexibility it gives meaning that the respondents can fill in at their own time, and may even answer the questions more truthfully because it is anonymous. The researcher planned on creating a Google sheet form that will be sent out systematically to different youths in CITAM Karen to collect the data shown in chapter four.

DIRECT OBSERVATION

Direct observation is one of the most passive qualitative data collection methods and here, the data collector takes a participatory stance, observing the setting in which the subjects of their observation are while taking down notes, video/audio recordings, photos, etc as stated by Jovancic (2019).

According to Puckett (2018) observation is an effective method because it is straightforward and efficient plus it doesn't typically require extensive training on the part of the data collector, and he or she is generally not dependent on other participants. The observations are recorded in field notes.

There are a variety of types of observational research, each of which has both strengths and weaknesses and these types are organized below by the extent to which an experimenter intrudes upon or controls the environment as stated by Ajinomoh (2015).

Observational research is particularly prevalent in the social sciences and in marketing and it is a social research technique that involves the direct observation of phenomena in their natural setting (Ajinomoh, 2015). This differentiates it from experimental research in which a quasi-artificial environment is created to control for spurious factors, and where at least one of the variables is manipulated as part of the experiment and it is typically divided into naturalistic observation, and participant observation according to Ajinomoh (2015).

The researcher planned on conducting an observation of the current youth worship centers and how people behave to collect data.

CASE STUDY METHOD

Case study is a way of organizing social data so as to preserve the unitary character of the social object being studied and it's a method of exploring and analyzing the life of a social unit, be that a person, a family, an institution, cultural group or even entire community (Choudhury, n.d)

The case history or study is a synthesis and interpretation of information about a person and his relationship to his environment collected by means of many technique and it is in which the researcher explores in depth a program, an event, an activity, a process, or one or more individuals and the cases are bounded by time and activity, and researchers collect detailed information using a variety of data collection procedures over a sustained period of time (Elmabruk, Reda & Almwber, 2018).

The researcher planned on picking out two youth worship centers and do a case study on them.

1-ON-1 INTERVIEWS

One-on-one interviews are one of the most common types of data collection methods in qualitative research as stated by Jovancic (2019) and here, the interviewer collects data directly from the interviewee. Due to it being a very personal approach, this data collection technique is perfect when you need to gather highly-personalized data.

Depending on your specific needs, the interview can be informal, unstructured, conversational, and even spontaneous (Jovancic, 2019). They don't require the literacy on the part of the respondents, for one thing and for another, they allow the interviewer to uncover deep insight by clarifying and deep-diving into the respondent's answers, as well as by collecting nonverbal data (Pukett, 2018).

The researcher planed on sitting down or calling different youth groups and members and asking them structured questions on what challenges they face and on what improvements should be focused on.

3.6 DATA ANALYSIS

CONTENT ANALYSIS

Content analysis is a class of research methods at the intersection of the qualitative and quantitative traditions. It is promising for rigorous exploration of many important but difficult-to-study issues of interest to organizational researchers in areas as diverse as business policy and strategy, managerial and organizational cognition, organizational behavior, human resources, social-issues management, technology and innovation management, international management, and organizational theory (Duriau, Reger, & Pfarrer, 2007).

This is one of the most common methods to analyze qualitative data. It is used to analyze documented information in the form of texts, media, or even physical items. When to use this method depends on the research questions. Content analysis is usually used to analyze responses from interviewees (Bhatia, 2018).

According to P, Burnard in British dental journal this is the most common method of data analysis used in qualitative work. The researcher used this analysis method for the content created during the interviews, surveys and case study.

3.7 DATA PRESENTATION METHODS

Acknowledging your tests and testing processes-Clarify all of the tests you performed and why you performed them. This part is very important for it is going to redefine your goals (Smith, 2014).

Explaining how you gather the data through a visual presentation-It is very important that you are able to explain how you collect your data and the measures you took to make sure that your ways of collecting data are objective and accurate (Smith, 2014).

Make graphs and charts-Visual presentations are the best ways to show the results of your tests. It can be a pie chart, scatter graph or other visual aid to illustrate results. You need to make sure that the visuals are well presented and are appealing enough to capture the attention of your audience (Smith, 2014).

Invent your collusions and then present how they differ through a report-You also need to explain very well what the results mean and why they are important and how you can compare those to previous studies or similar experiments (Smith, 2014).

Photos.

Define your sample set-he readers or audiences have to understand that the sample set for your study so you need to explain to them very well why you selected this as your "ideal" for the presentation (Smith, 2014).

3.8 LOGICAL FRAMEWORK

Objective 1: To establish the importance of blending sustainable biomimiced designs and culture in a youth worship center.

Data needs	Data source	Data collection tools	Analysis method	Expected output

Establish an importance of blending sustainable biomimiced designs with the Kamba culture	Literature	Review of Literature	Content analysis	Knowledge of importance of blending nature with culture.
---	------------	----------------------	------------------	--

Objective 2: To identify how biomimicry and culture can be combined in interior spaces and landscape.

Data needs	Data source	Data collection tools	Analysis method	Expected output
Understanding how to combine nature and culture in the interior spaces and landscape.	Literature Case study	Review of literature	Content analysis Visual Analysis	Knowledge of how to combine nature and culture in a space.

Objective 3: To discover the extent in which CITAM Karen Youth center has blended biomimicry and culture.

Data needs	Data source	Data collection tools	Analysis method	Expected output
-------------------	--------------------	------------------------------	------------------------	------------------------

Current condition in CITAM Karen youth worship center.	CITAM KAREN	Photographs Reports	Content analysis Visual Analysis	Report on existing conditions at CITAM Karen youth center.
--	-------------	---------------------	-------------------------------------	--

Objective 4: To propose design solutions that blend biomimicry and Kamba culture in CITAM youth center.

Data needs	Data source	Data collection tools	Analysis method	Expected output
Creation of designs that solve the problem at CITAM Karen youth worship center.	Literature CITAM KAREN	Review of Literature sketching	Content analysis Assessment and evaluation	Designs that will solve the problems at CITAM Karen youth worship center.

TABLE 3.1 LOGICAL FRAMEWORK (SOURCE: AUTHOR, 2020)

3.8 CONCLUSION

In conclusion, the methodology used for the research was mainly qualitative. Data was collected through observation, closed ended questionnaire and one on one interviews. Field notes and responses to survey were analyzed and presented as narrative, tables and photographs, with descriptions. The population was drawn from the members of the youth church.

CHAPTER FOUR

4.0 SITE ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 INTRODUCTION

This chapter focuses on analysis of CITAM Karen youth center and interpretation of data that was one for the research. The findings are based on interviews, surveys, photos and observation. Using Microsoft Excel the data was analyzed and the findings are presented in pie charts. There is also a bar graph representing the number of people who viewed the survey and those that answered. The narrative analysis is presented with the photographs and graphs. The researcher collected data and put it in a way that would enable analysis and interpretation to take place. In the following you will find that the majority of the participants wanted a better design of the tent that will create a better experience and sustainability in terms of the materials used.

4.2 QUALITATIVE ANALYSIS

According to the primary research done through observation, the researcher's aim was to find out how it feels to fellowship in the current condition that is in CITAM Karen youth center tent and from the field notes and photos taken the following conclusion were made. The tent seems very old and abandoned in terms of the design, cleanliness and a sustainability approach. When it gets hot during the service the tents are lifted up therefore there's no enough circulation of air because of lack of windows. This makes people to go outside to get fresh air during the service which is highly disruptive. In terms of furniture, plastic chairs are used which is harmful to the environment in the long run and uncomfortable to sit on for a long period of time.

In terms of exhibition and display, the relation between the sound-room, where the congregation sits and the stage don't bring out a sense of harmony and connection. The furniture layout where the congregation is disorganized and there's no unity. As for the stage design the layout of instruments has been poorly done as well as the sound system. The carpet is rugged and the material used isn't sustainable. In terms of lighting there is

minimal use of artificial lighting but the natural light is very effective and in the sound room there is minimal to no lighting. The landscape around the area is just plain grass and it's surrounded by a mushy area as well which gets worse during the rainy season. There is no aesthetic value found around the church in terms of landscaping.

4.3 QUANTITATIVE ANALYSIS

GENDER AND AGE OF RESPONDENTS

After the interviews were successfully completed in terms of one on one and a closed ended survey done online using a typeform, the researcher established the response rate to survey done online issued out to the respondents. In the below figure 4.13, the researcher sent out a survey link to two groups involved with the church that is the Campus student fellowship group and The worship team group and a total of twenty eight (28) people took a look at the survey. Out of this site visits, a total of fifteen (15) people responded with fourteen (14) being of the age of (18-35) and one being below making a response rate of fifty four percent (54%). Eight being female and seven being male. This survey is therefore counted as successful since more than half responded and the target of the author was ten (10).

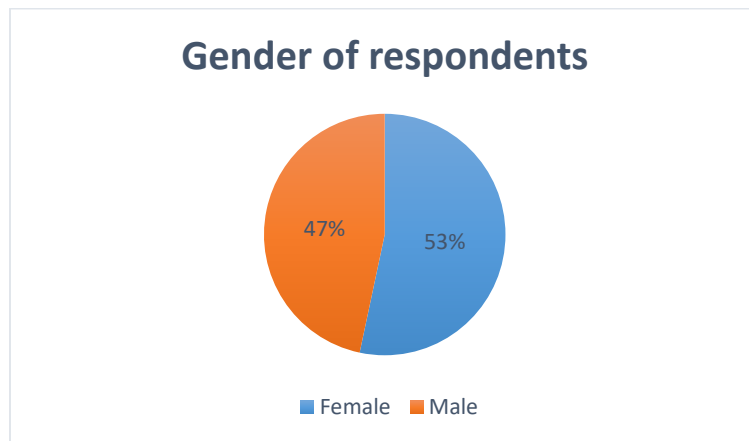


FIGURE 4.13 GENDER OF RESPONDENTS. (SOURCE: AUTHOR, 2020)

According to the researcher, the target audience was between ages 18-35 and therefore since there was one out of fifteen of the respondents was below eighteen. A consent form was sent out to make sure the respondent and guardian were comfortable with her taking the survey.

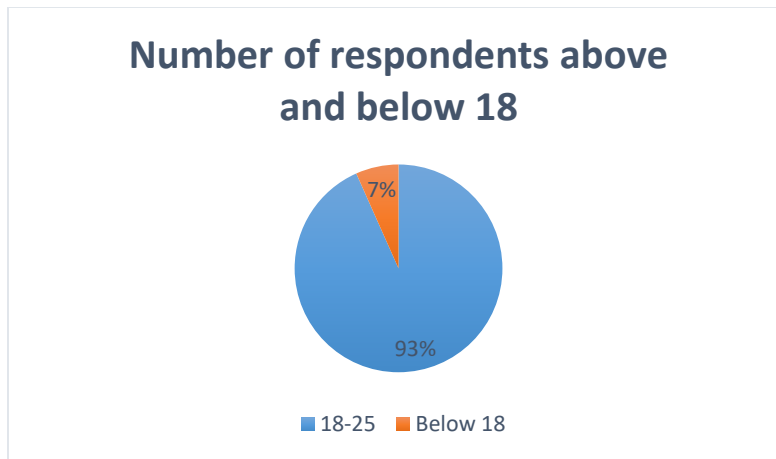


FIGURE 4.14 NUMBER OF RESPONDENTS ABOVE AND BELOW 18. (SOURCE: AUTHOR, 2020)

LONGIVETY OF MEMBERSHIP THE RESPONDENTS

The researcher's aim here was to establish how long the respondents have been members of CITAM Karen youth worship center as indicated in figure 4.15 below. The results show that the respondent membership longevity as follows: 47% of them had been member for 6months to 2 years, 40% have been members for 3yrs and more while only 13% have recently joined CITAM Karen. This is an important data to the researcher because the opinions of some who have stayed longer may differ from those who are new because they

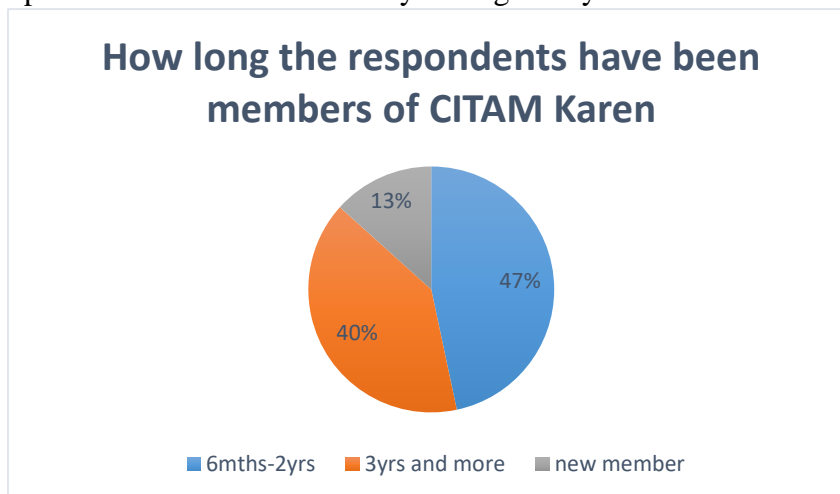


FIGURE 4.15 HOW LONG THE RESPONDENTS HAVE BEEN MEMBERS OF CITAM KAREN (SOURCE: AUTHOR, 2020)

understand the conditions of the tent much better than others.

Most of the respondents that have been members for a long time therefore they understand better the challenges faced

for example, the benches used during service have slanted thus making it uncomfortable to

sit on for long periods of time. They also complained about the plastic chairs which get spoilt regularly and are not sustainable because it can't be disposed since plastic doesn't decay.

BIGGEST PROBLEM CONCERNING CITAM KAREN YOUTH TENT

The researcher further sought information from respondents on what was the biggest problem concerning CITAM Karen opportunities and the results below indicate their opinions concerning the problems and challenges being faced in the youth center.

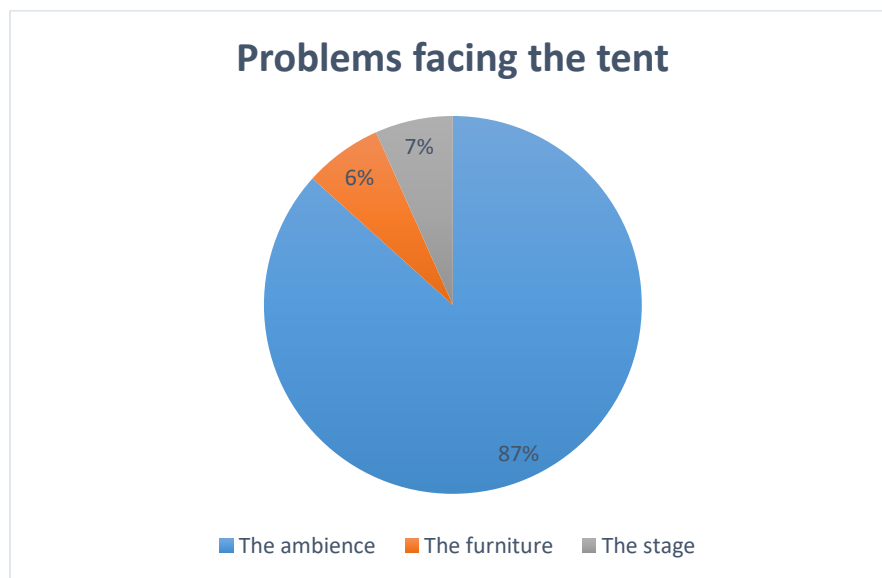


FIGURE 4.16 PROBLEMS FACING THE TENT (SOURCE: AUTHOR, 2020)

According to the results in figure 4.16 above, 87% of the respondents thought that the major problem with the tent is the ambience meaning there is everything wrong with it. 7% of the respondents thought the stage was the biggest problem in the tent because it has started falling apart. 6% of the respondents thought that it was an unnecessary idea for there to be a change that reflects a blend between nature and culture.

RESPONDENTS TAKE ON THE IDEA OF BLENDING NATURE WITH A LOCAL CULTURE LIKE KAMBA

The researcher with this question sought information on if the idea of blending nature (biomimicry) and kamba culture was a popular opinion amongst the respondents. The results in figure 4.17 below show that 80% of the respondents indicated that they thought it was a good idea, 13% thought that it was better for the design to be westernized and 7% thought it was unnecessary.

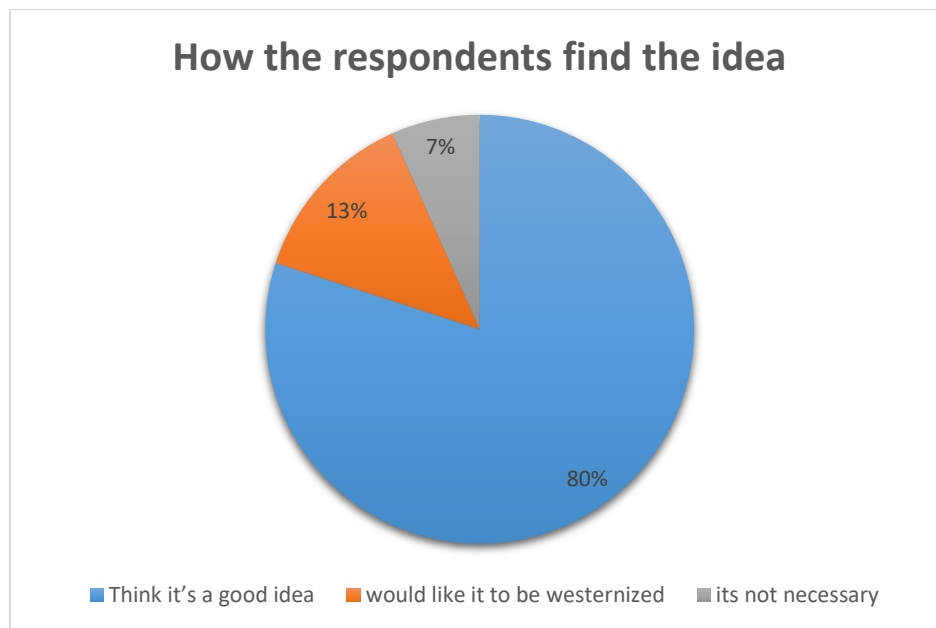


FIGURE 4.17 HOW THE RESPONDENTS FIND THE IDEA (SOURCE: AUTHOR, 2020)

CHURCHES THAT THE RESPONDENTS LIKE THE DESIGN

The researcher further sought information on what examples of church designs out there the respondents preferred to get a rough idea on what kind of design was popular among them. The results in figure 4.18 below show that 38% of the respondents liked the interior design at International Church Center (ICC), 15% of them liked the designs at CITAM Woodley, 8% preferred CITAM Embakasi, Faith evangelist Church (FEM), Holy Basilica, CITAM Ngong and CITAM Valley Road. 7% of the respondents preferred Mavuno.

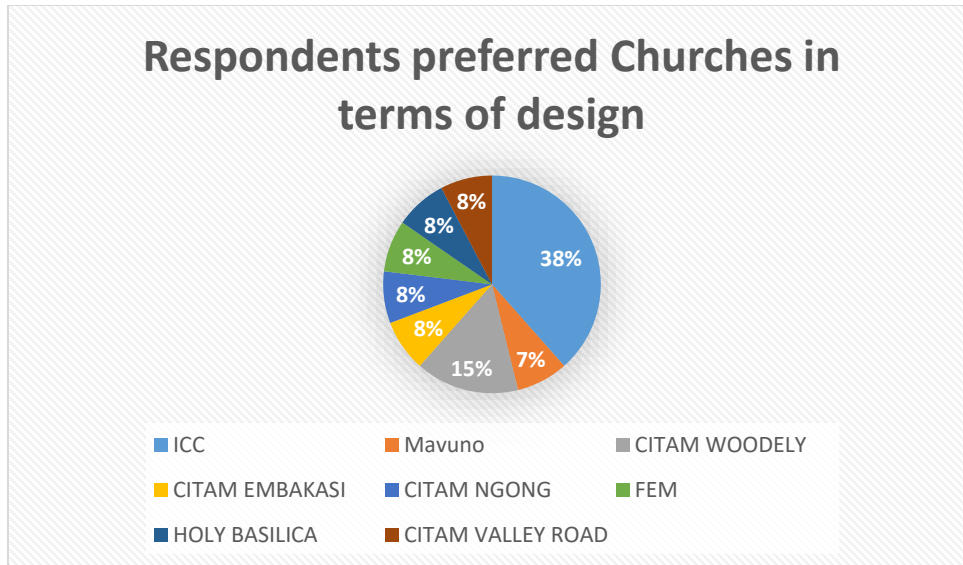


FIGURE 4.18 RESPONDENTS PREFERRED CHURCHES ON TERMS OF DESIGN. (SOURCE: AUTHOR, 2020)

According to this analysis it is evident that the respondents preferred church designs that are more modern, unique and creative as shown in figure 4.18.

4.4 PRESENTATION OF FINDINGS

This study sought to:

- I. To establish the importance of blending sustainable biomimiced designs and culture in a youth worship center.
- II. To identify how biomimicry and culture can be combined in interior spaces and landscape.
- III. To discover the extent in which CITAM Karen Youth center has blended biomimicry and culture.
- IV. To propose design solutions that blend biomimicry and Kamba culture in CITAM youth center.

The research questions that defined the scope of this study were:

I. What is the importance of blending sustainable biomimiced designs and culture in the youth worship center?

II. What ways can one combine biomimicry with culture in the interior spaces and landscape?

III. What extent has CITAM Karen youth center blended biomimicry and culture?

IV. What design solutions can one blend biomimicry and Kamba culture in CITAM Youth worship center?

The researcher used surveys, literature reviews and one on one interview as a data collection methods to meet the above stated objectives. The results of this research reveal that there is room for use of biomimicry and Kamba culture because the youth church colors are similar to those of the Kamba community and biomimicry relates to the nature of God. The respondents found it to be a good idea to blend the two and bring unique and creative designs to the church. In terms of most literature reviews, most designers found it necessary to include biomimicry in a church setting because it shows different layers and perspectives of God's nature and inclusivity of culture in a design is equally as necessity so that it can bring a sense of relatability.

Importance of blending sustainable biomimiced designs and culture in the youth worship center.

In a bid to answer the first research question, seeking to determine the importance of blending sustainable biomimiced designs and culture in the CITAM youth worship center. The data used for analysis of this research objective was collected from literature reviews. According to an article by Ryan Nelson he says that it is important to understand interior design in church spaces all begins with scripture because God is the one who

creates and inspires beautiful things. It only makes sense to use nature which is a representation of God's design and blending it with the culture of the specific area of the church to come up with a design that challenges and inspires us to worship him. In the article he says that the same way we use lighting fixtures to set a room is the same way aesthetics is important in a church because it affects the congregation. Biomimiced designs can help one see different layers and perspectives of the nature of God.

Ways in which combination of biomimicry with culture in the interior spaces and landscape has been used.

The second research questions was meant to find out ways in which combination of biomimicry with culture in the interior spaces and landscape can be used. According to the researchers design exemplar, Thambisa Mjo, she used cultural stories and shapes to come up with designs for example lamp shades that were related to the xibelani skirts worn by the Tsonga women as well as literature reviews from designers who were inspired by nature and biomimicry features to create designs from architectural to shoes to furniture. The ways the researcher found to combine biomimicry with culture is through the inspiration of hexagonal shapes from nature like the honey combs and giraffe patterns and blending it with the Kamba culture colors which are red brown and yellow.

Extent at which CITAM Karen youth center has blended biomimicry and culture.

The third research question was aimed to see the extent at which CITAM Karen youth worship center has used a blend of biomimicry and culture which the results showed that there was limited use of it. According to figure 4.19 to 4.22 it shows the current situation in CITAM Karen youth center in terms of interior architecture, furniture, exhibition and display as well as landscaping.



FIGURE 4.19 LANDSCAPING AT CITAM KAREN YOUTH CENTER (SOURCE, AUTHOR, 2020)



FIGURE 4.20 INTERIOR ARCHITECTURE IN CITAM KAREN (SOURCE: AUTHOR, 2020)



FIGURE 4.21 STAGE DESIGN AT CITAM KAREN (SOURCE: AUTHOR, 2020)



FIGURE 4.22 FURNITURE AT CITAM KAREN (SOURCE: AUTHOR, 2020)

Design solutions can one blend biomimicry and Kamba culture in CITAM Youth worship center.

The final research objective was meant to propose design solutions that blend biomimicry and Kamba culture in CITAM Karen youth worship center. The survey that was filled by the respondents and the one on one interviews that were done revealed that most of the members of the congregation. From the responses indicated in figure 4.16, 87% thought that the biggest problem with the church is the ambience, 6% thought it was the furniture and 7% thought that the stage was a problem.

In the following chapter the recommendations on each area of interior design has been described in detail. In terms of sustainability the research stuck to using materials that are eco-friendly like bamboo and steel metal that can be recycled. Inspiration from natural shapes like honey combs and giraffe skin patterns which are all hexagonal.

According to the current situation at the church is that there is demolishing going on as seen in figure 4.23 and 4.24 because they are currently redesigning the church meaning the researcher project is currently under reconsideration of whether it can be implemented in the upcoming tent.



FIGURE 4.23 CURRENT DEMOLISHED CITAM
KAREN YOUTH WORSHIP CENTER



FIGURE 4.24 CURRENT DEMOLISHED CITAM
KAREN YOUTH WORSHIP CENTER

4.5 Conclusion

From the analysis, it was concluded that there was plenty opportunities for creating interior spaces with sustainable materials, in nature inspired furniture, eco-friendly landscaping and unique and creative exhibition and display that blend biomimcry and kamba culture in the youth worship center. This is in terms of benches, lighting, decorative purposes and other areas. It also focused on synthesis and interpretation of data that was analyzed and presented based on the research questions. The researcher aims to come up with solutions to those results in the next chapter.

CHAPTER FIVE

5.0 SUMMARY FINDINGS CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

The following chapter will be having conclusions, recommendations and suggestions for further research based on the results of the study. The study focused on establishing solutions that blend biomimicry and culture in the youth worship center. Earlier on the literature review showed that user experience is an important method in interior design and is being implemented even in church. The following findings were based on the objectives of the study and the researcher sought to propose ways in which one can blend biomimicry and the kamba culture in the youth worship center. The study conclusions and recommendations are found below.

5.2 Summary of Data Analysis/Findings

According to the respondents feedback, data analysis and findings, several factors have been identified which forms conclusion of this study of blending biomimicry and culture in CITAM Karen youth worship center and if they are taken into consideration it will be able to bring out a church that relates with the congregation in terms of design. Based on the findings of this study, the main conclusion that was made was that the current design in the church was a big problem especially the ambience. There is a limited approach to the blending of biomimicry and culture currently in the church. The researcher therefore sought to create designs that reveal the relation between design and God in order to reveal his nature in such a setting.

.

5.3 Recommendations

This study identified the following areas that could be used to improve the blend of biomimicry and Kamba culture in CITAM Karen youth worship center. The main

inspiration of the whole design comes from honey combs and other hexagonal shapes from nature.



Figure 5.25 honey comb (source, KROT.INFO, 2020)

Exhibition and Display



Figure 5.26 Topeka bible church stage design (source: www.churchstagedesignideas.com, 2020)

The researcher's inspiration comes from a cultural and biomimicry perspective by blending the two to become one in a particular area of the church in terms of exhibiting and display of items. The areas I will be working on is the stage design which is used for the band and worship team. Figure 5.26 shows an inspiration.

In my proposed design, the colors will be as a result of the current colors CITAM Karen uses that relate with the Kamba culture. The researcher plans on using the patterns and designs from beads that the Kamba use to create unique forms as well as nature related in terms of materials and shapes to make them more sustainable and relatable especially in

the making of display units which a mostly geometrical shapes as seen in the sketch in figure 5.27. Using flowers, plants, biomorphic features and patterns to come up with creative forms for the exhibiting units. Understanding the importance of interior design in a church begins in scripture and knowing a God who creates and inspires beautiful things therefore creating a space that resembles God character is important (Nelson, 2016). The stage will have hexagonal shapes that depict light and a huge cross in the middle so that as the congregants enter the church the main focus is the church. Since the researcher aims to use eco-friendly materials used to build the stage, in terms of structure, having a great back system to support your elements and making sure they are not flammable and

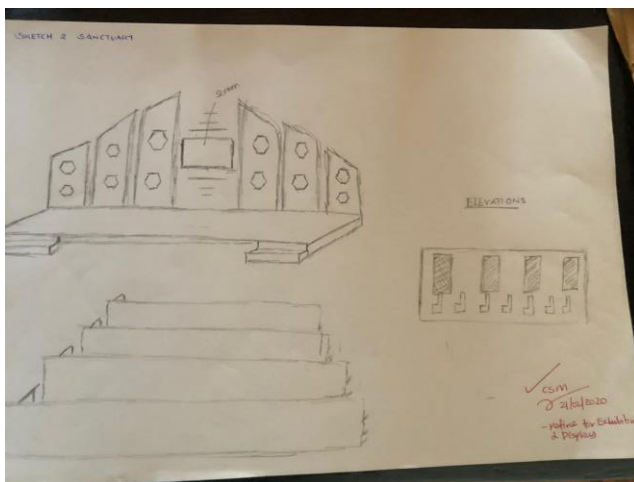


FIGURE 5.27 STAGE DESIGN SKETCH

that are flexible to be used (Terracast, 2015).

In terms of lighting, LED is highly energy efficient lighting and it at least uses 75% less energy, and last 25 times longer, than incandescent lighting. Next is lighting. A great stage design will look mediocre with bad lighting and stage design can look better with appropriate fixtures

(Terracast, 2015). The focus is mainly on the front-lighting specifically the quality of light and the angle to make sure it doesn't wash out projection screens or stage design elements. There should be a back-lighting to help separate your speakers or musicians from the backdrop and then the colored lighting for the elements like the hexagonal shapes.

Interior Architecture

The tent in the youth center in CITAM Karen has been in existence for the last 21 years therefore the tent and everything else in it has been slowly degrading in terms of quality over the years. The front section of the tent which is the stage that is currently falling

apart. One of the sides of the tent where the congregation sits, the windows don't work and one has to fold the tent from the bottom for fresh air to enter. The sound room from the back together with where the congregation sits. The current appearance of the sound room externally and internally, the material used for the container makes it hot to work there when it's sunny and when it rains there is leaking from the room. Also the space isn't enough for the sound crew and worship members. The whole tent from the entrance, the church mostly uses natural lighting since the artificial lighting doesn't work and the whole ambience of the tent is not pleasing since everything is old and worn out.



FIGURE 5.28 FLOOR PLAN OF PROPOSED LAYOUT OF THE INTERIOR

The idea of the youth church is to bring a more modern feel and a blend between biomimicry and the kamba culture in terms of shapes and colors because it brings a sense of belonging and the environment plays a big role in building a connection with God during the service (Nelson, 2016). I plan on using hexagons as a nature inspired shape and implementing the colours and some beads of the Kamba culture into the design. The materials used include laminate, glass, bamboo wood and concrete. Figure 5.28 shows a rough idea of the proposed floor plan.

Landscape Design

The concept of the proposed landscape design in CITAM Karen youth worship center is based on an inspiration of having been biomimicry and Kamba culture which I plan on implementing sustainable systems and colors from the Kamba culture. The researcher plans on adding water area with an bridge walkway, a bicycle ramp, bamboo pathway round the tent, landscape screening through bushes, miniature rock garden, wall fountain on the walls on the tent entrance, an arbor around the sitting area and a pergola on the entrance of the tent. The shape of the tent changed from the original design because there's a new tent that is currently on the way thus this design is for the upcoming tent in the site. The following are sketches from figure 5.29 to 5.32 of the proposed landscape



design.

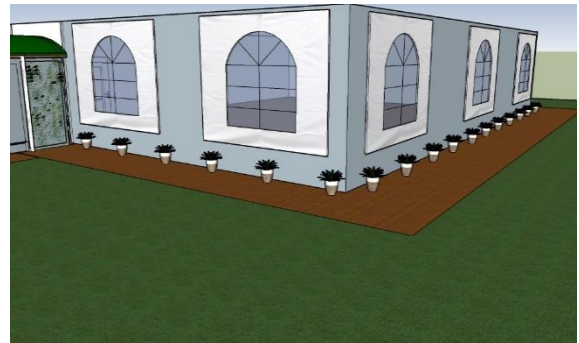


FIGURE 5.29 SKETCH OF LANDSCAPE



FIGURE 5.31 SKETCH OF LANDSCAPE BENCH DESIGN (SOURCE: AUTHOR, 2020)

FIGURE 5.30 SKETCH OF LANDSCAPE



FIGURE 5.32 SKETCH OF LANDSCAPE PERGOLA DESIGN

Furniture Design

The researcher's inspiration comes from a cultural and biomimicry perspective by blending the two to become one in a particular item. The item I will be working on are lighting, pulpit, armchair, bench and a table. The colours will be as a result of the current colours CITAM Karen uses that relate with the Kamba culture. They plan on using the patterns and beads that the Kamba use to create unique forms as well as nature related in

terms of materials and shapes to make them more sustainable and relatable. The following from figure 5.33 to 5.35 are proposed sketches of furniture designs.

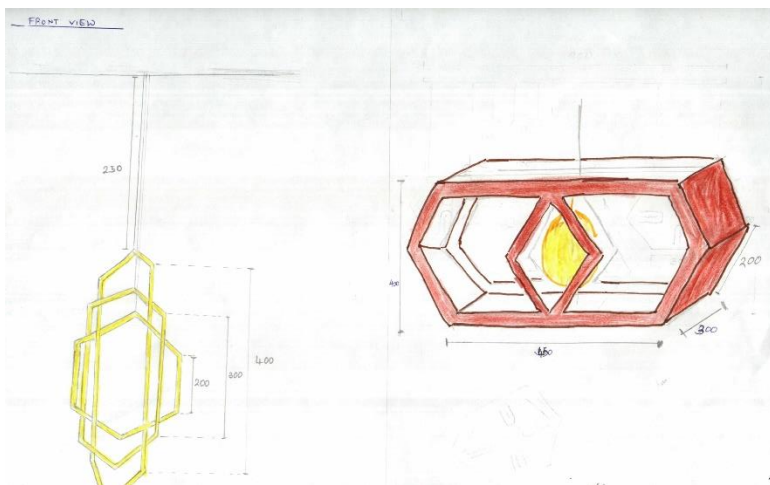
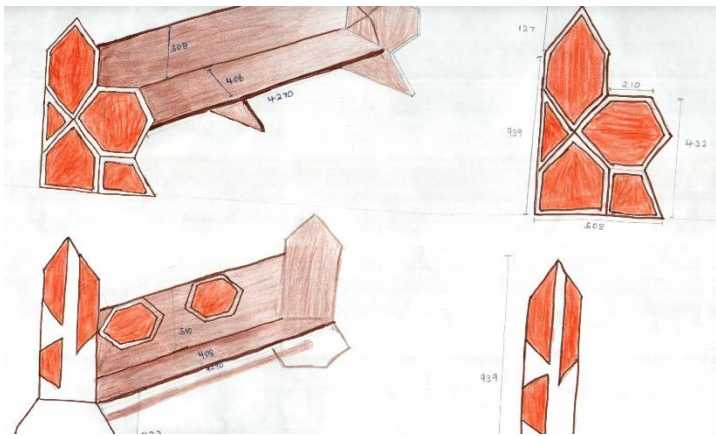


FIGURE 5.34 SKETCH OF LIGHTING DESIGN (SOURCE: AUTHOR, 2020)

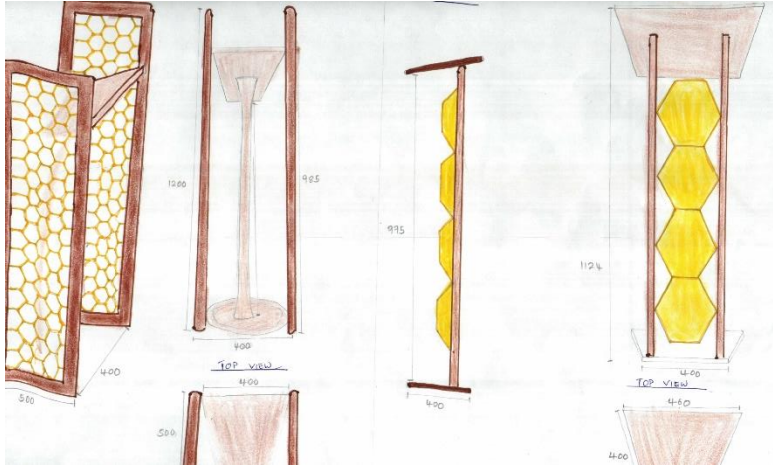


FIGURE 5.35 SKETCH OF PULPIT DESIGN (SOURCE: AUTHOR, 2020)

5.4 Conclusion

Finally, the study concluded that despite the current situation and limitations the researcher went through, designers can propose use of biomimicry and culture especially in a religious context. Just like in the bible when God ordered the building of the temple, there were specific instructions to them, God had a vision for how the places, people, and rituals which associate with him should appear and nature is the closest in terms of design we get of God's creativity.

5.5 Suggestion for further study

This research was not exhaustive enough due to the limitations faced. The study has not been ventured into by many researchers thus opened up various opportunities for further research. The data used in this study is viable based on the number of respondents interviewed. In terms of this study, further work needs to be done in terms of a wider scope of respondents of different ages in and in different youth churches to gauge if the problems are similar. The researcher suggests the following key areas as follow-ups to the current study:

- A study on how biomimicry and culture affects the ambience and congregation in a church service. Especially in doing the research in a different location because of the different cultures around the world.
- An analysis of different church ambience and designs and how it relates with and affects a service.

.

REFERENCES

Ajinomoh, M. (2015). What is observational research.

<https://infotechcommunication.blogspot.com/2015/11/what-is-observational-research.html>

Ball, P. (2016). Why Nature Prefers Hexagons. <http://nautil.us/issue/35/boundaries/why-nature-prefers-hexagons?source=TruthAndBeauty>

Ben-Shlomo Y, Brookes S, Hickman M. (2013). Lecture Notes: Epidemiology, Evidence-based Medicine and Public Health (6th ed.), Wiley-Blackwell, Oxford.
<https://www.healthknowledge.org.uk/public-health-textbook/research-methods/1a-epidemiology/methods-of-sampling-population>

Bhat, A. (n.d). Types of sampling: sampling methods with examples.

<https://www.questionpro.com/blog/types-of-sampling-for-social-research/>

Bhatia, M. (2018). Your guide to qualitative and quantitative data analysis methods.

<https://humansofdata.atlan.com/2018/09/qualitative-quantitative-data-analysis-methods/>

Carpet Central and Hardwood flooring inc, (2020). Eco-friendly green flooring

<http://www.carpetcentralhardwood.com/companygreendesign.asp?CompanyID=86226>

Chalcraft, E. (2012). Biomimicry shoe by Marieka Rastma and Kostika Spaho.

<https://www.dezeen.com/2012/07/17/biomimicry-shoe-by-marieka-rastma-and-kostika-spaho/>

Commisceo Global, (2014). How Cultural Differences Impact Interior Design.

<https://www.commisceo-global.com/blog/how-cultural-differences-impact-interior-design>

Coudhury, A. (n.d). Top 6 Methods of Data Collection – Explained.

<http://www.yourarticlelibrary.com/social-research/data-collection/top-6-methods-of-data-collection-explained/64498>

Davidson, C. (2013). Throwback tangled boxes.

<https://churchstagedesignideas.com/tangled-boxes/>

Defranzo, S. (2011). What's the difference between qualitative and quantitative research?

<https://www.snapsurveys.com/blog/qualitative-vs-quantitative-research/>

Design, (2017). 5 minutes with creative director thabisa mjo. [https://visi.co.za/5-minutes-](https://visi.co.za/5-minutes-with-creative-director-thabisa-mjo/)

[with-creative-director-thabisa-mjo/](https://visi.co.za/5-minutes-with-creative-director-thabisa-mjo/)

Elmabruk, Reda & Almwber, Asmaa, (2018). Research design and methodology.

10.13140/RG.2.2.15776.23041.

Fehrenbacher, J. (2012). Biomimetic architecture: Green Building in Zimbabwe Modeled after Termite Mounds. [https://inhabitat.com/building-modelled-on-termites-eastgate-](https://inhabitat.com/building-modelled-on-termites-eastgate-centre-in-zimbabwe/)

[centre-in-zimbabwe/](https://inhabitat.com/building-modelled-on-termites-eastgate-centre-in-zimbabwe/)

Interior Design Trends, (2016). Biomimicry in Interior Design.

<http://ksaintinteriors.com/2016/07/18/biomimicry-interior-design/>

Jovancic, N. (2019). 5 Data Collection Methods for Obtaining Quantitative and

Qualitative Data. <https://blog.leadquizzes.com/data-collection-methods/>

Lembke, J. (2017). The Story behind Malmo's Turning Torso, the World's First Twisting

Tower. [https://theculturetrip.com/europe/sweden/articles/the-story-behind-malmos-](https://theculturetrip.com/europe/sweden/articles/the-story-behind-malmos-turning-torso-the-worlds-first-twisting-tower/)

[turning-torso-the-worlds-first-twisting-tower/](https://theculturetrip.com/europe/sweden/articles/the-story-behind-malmos-turning-torso-the-worlds-first-twisting-tower/)

Lionesses of Africa, (2016). The startup story of a talented creative entrepreneur with an eye on building an exciting new lifestyle brand in Africa

<http://www.lionessesofafrica.com/blog/2016/4/19/the-startup-story-of-thabisa-mjo>

Living rooms by Gayle, (2016). 5 Eco-Conscious Interior Design Solutions to Reduce Your Carbon Footprint. [https://www.livingroomsbygayle.com/post/5-eco-conscious-](https://www.livingroomsbygayle.com/post/5-eco-conscious-interior-design-solutions-to-reduce-your-carbon-footprint)

[interior-design-solutions-to-reduce-your-carbon-footprint](https://www.livingroomsbygayle.com/post/5-eco-conscious-interior-design-solutions-to-reduce-your-carbon-footprint)

Molina, J. (2018) Diane Thorsen is setting the standard. <https://identity.ae/diane-thorsen-is-setting-the-standard/>

My Accounting Course, (2020). What is a Target Population? <https://www.myaccountingcourse.com/accounting-dictionary/target-population>

Nelson, R. (2016). Beyond the Stage: A Holistic Approach to Church Design. <https://blog.proclaimonline.com/2016/11/08/church-interior-design/>

Pinto, J. (2019). The Incredible Design World of Spanish Designer Sarah Folch. <https://www.bestinteriordesigners.eu/the-incredible-design-world-of-spanish-designer-sarah-folch/>

Proto.io (2015). 10 of the Best Design Philosophies of All Time. <https://blog.proto.io/10-of-the-best-design-philosophies-of-all-time/>

Puckett, S. (2018). Data Collection Techniques. <https://www.fulcrumapp.com/blog/field-data-collection-methods/>

Smith, J. (2014). How to Present a Decent Data Analysis. <https://linkup.imanet.org/blogs/jhasper-smith/2014/02/24/how-to-present-a-decent-data-analysis?ssopc=1>

Terracast, (2015). 7 Top Tips For Successful Stage Design. <https://www.terracastproducts.com/7-top-tips-for-successful-stage-design/>

Tonisi, L. (2019). A hot young talent with designs on business success. <https://www.dailymaverick.co.za/article/2019-06-30-a-hot-young-talent-with-designs-on-business-success/>

UX Design - Research and Insights (2017). 5 design philosophies to live and design. <https://www.justinmind.com/blog/5-design-philosophies-to-live-and-design-by/>

Veer, G. (2011). Culture centered design. 7-8. 10.1145/2037296.2037299. https://www.researchgate.net/publication/221571091_Culture_centered_design

APPENDIX I

SEMI STRUCTURED SURVEY QUESTIONS

The researcher is a final year B.A in Design student at The School of Arts and Design, University of Nairobi, doing a research on Blending biomimicry and Kamba culture in CITAM Karen youth worship center” Kindly assist by filling out the survey which is strictly for school purposes only.

The link sent was <https://finalyearproject20.typeform.com/to/djvzIp>

Hi there, I would love to get your opinion on how to create a better experience in TYC

- What’s your name?
- Are you between age 18 and 35?
- How long have you been a member of TYC in CITAM KAREN?
 - Honestly I'm new here
 - 6 months to 2 years
 - 3 years and more
- In terms of design, what is the biggest problem concerning TYC?
 - The stage
 - The furniture
 - The ambience of the tent
 - The landscape design

- What is your take on blending a kenyan culture and nature in a design of a church especially in TYC?

-That's a very unique innovative idea

-I'd just love the tent to look like Elevation church, okay!

-Is that really necessary?

-I love the tent the way it is

- What would you personally change and want to be included in TYC?
- Which Church in Nairobi have you been to that you can say enyewe the design and ambience of this place imeweza!
- Did you know that the design of a place affects how one experiences it. God was very detailed about how the tabernacle and Temple should look and feel because it said a lot about him and therefore the ambience of the church can affect the congregation.
- Do you have anything else to add?

I appreciate you taking your time to fill out this survey, God Bless You!!!

APPENDIX II

ESTIMATED BUDGET

Transport to the site	2500
Internet	5000